

Amendments to the Claims

This listing of the claims will replace all prior versions and listings of the claims in this application:

1. (Canceled)
2. (Previously presented) A method of disposing waste, said method comprising:
forming at least one primary waste pond at least partially constructed from earthwork and positioned within an outer pond that overlays said primary waste pond and surrounds at least an upper lateral portion of said primary waste pond; and
establishing a stable microbiological methane fermentation zone within each of said primary waste ponds;
wherein at least one of said primary waste ponds has a bottom that is at least 6 meters below a surface of said outer pond and is at least partially separated from said outer pond by a wall.
- 3-14. (Canceled)
15. (Previously presented) A method of disposing waste, said method comprising:
forming a primary waste pond within an outer pond wherein said primary waste pond is at least partially constructed of earthwork and has a bottom that is at least 6 meters below a surface of said outer pond;
establishing a stable microbiological methane fermentation zone within said primary waste pond;
collecting a gas emitted from said stable microbiological methane fermentation zone in a submerged gas collector; and
collecting said gas in a gas cap.
16. (Original) The method of claim 15, wherein said method further comprises:
using said gas for power generation.
- 17-24. (Canceled)
25. (Previously presented) A method of disposing waste, said method comprising:
forming one or more inner ponds within an outer pond wherein at least one of said inner

ponds has a bottom that is at least 6 meters below a surface of said outer pond;

establishing one or more stable microbiological methane fermentation zones within said one or more inner ponds;

wherein each of said stable microbiological methane fermentation zones comprises facultative heterotrophic bacteria and methane bacteria; and

causing said facultative heterotrophic bacteria and methane bacteria to produce a gaseous emission comprising about 70-85% methane and the balance mostly nitrogen.

26. (Previously presented) A method of disposing waste, said method comprising:

forming one or more inner ponds within an outer pond wherein at least one of said inner ponds is at least partially constructed of earthwork and has a bottom that is at least 6 meters below a surface of said outer pond;

establishing one or more stable microbiological methane fermentation zones within said one or more inner ponds

collecting a gas emitted from at least one of said methane fermentation zones in a submerged gas collector; and

collecting said transported gas in a gas cap.

27. (Previously presented) The method of claim 26, further comprising using said gas for power generation.

28-33. (Canceled)

34. (Currently amended) A method for treating wastewater, comprising:

establishing a methane fermentation zone within a pond having a surface exposed to sunlight, wherein said methane fermentation zone is disposed below said open surface, is at least partially laterally surrounded by said pond, and has a bottom that is at least 6 meters below a top surface of said pond and is at least partially separated from said ~~outer~~ pond by a wall; and

feeding wastewater into said methane fermentation zone.

35. (Previously presented) The method of claim 34, wherein said establishing comprises establishment of a second methane fermentation zone within said pond.

36. (Previously presented) The method of claim 34, wherein said establishing comprises establishment of a methane fermentation zone within a pond comprising aerobic wastewater near the surface.

37. (Previously presented) The method of claim 34, further comprising generating free molecular oxygen in said pond from growth of microalgae.
38. (Previously presented) The method of claim 34, wherein said establishing comprises establishment of said methane fermentation zone comprising semi solid material in a highly reduced state to facilitate conversion to methane.
39. (Previously presented) The method of claim 34, further comprising deflecting oxygen from said methane fermentation zone.
40. (Previously presented) The method of claim 39, wherein said deflecting comprises deflecting oxygen to reduce intrusion of dissolved oxygen from said pond into said methane fermentation zone.
41. (Previously presented) The method of claim 34, wherein said establishing comprises establishment of said methane fermentation zone comprising settleable solids, facultative heterotrophic bacteria and methane bacteria.
42. (Previously presented) The method of claim 41, wherein said establishing comprises converting at least part of said settleable solids by said facultative heterotrophic bacteria and said methane bacteria into products including a gaseous emission.
43. (Previously presented) The method of claim 41, wherein said establishing comprises converting at least part of said settleable solids by said facultative heterotrophic bacteria and said methane bacteria into products including a gaseous emission comprising about 70-85% methane and the balance mostly nitrogen.
44. (Previously presented) The method of claim 34, wherein said establishing comprises establishment of said methane fermentation zone having a top surface area no greater than approximately 0.09 hectare.
45. (Previously presented) The method of claim 44, wherein said establishing comprises establishment of a methane fermentation zone having a depth of approximately 6 to 8 meters.
46. (Canceled)
47. (Previously presented) The method of claim 34, wherein said methane fermentation zone comprises a bottom that is lower than a bottom of said pond.
48. (Previously presented) The method of claim 34, further comprising oxidizing gaseous hydrogen sulfide emissions from said methane fermentation zone using aerobic wastewater in

said pond to form sulfates, thereby reducing noxious odors.

49. (Previously presented) The method of claim 34, wherein said wastewater flows out of said methane fermentation zone in an upward direction at a rate of less than 1.8 meters per day.

50. (Previously presented) A method of treating wastewater, comprising:

establishing methane fermentation within a fermentation pit that is covered by at least partially photosynthetically oxygenated wastewater of a pond and having a bottom that is at least 6 meters from a top surface of said pond; and

feeding wastewater into said fermentation pit.

51. (Previously presented) The method of claim 50, wherein said establishing comprises establishment of methane fermentation within said fermentation pit within said pond.

52. (Previously presented) The method of claim 50, wherein said establishing comprises establishment of methane fermentation within said fermentation pit that comprises semi solid material in a highly reduced state to facilitate conversion to methane.

53. (Previously presented) The method of claim 50, further comprising deflecting dissolved oxygen from said fermentation pit.

54. (Previously presented) The method of claim 53, wherein said deflecting comprises deflecting oxygen to reduce intrusion of dissolved oxygen from said pond into said fermentation pit.

55. (Previously presented) The method of claim 50, wherein said establishing comprises establishment of said methane fermentation zone comprising settleable solids, facultative heterotrophic bacteria and methane bacteria.

56. (Previously presented) The method of claim 55, wherein said establishing comprises converting at least part of said settleable solids by said facultative heterotrophic bacteria and said methane bacteria into products including a gaseous emission.

57. (Previously presented) The method of claim 55, wherein said establishing comprises converting at least part of said settleable solids by said facultative heterotrophic bacteria and said methane bacteria into products including a gaseous emission comprising about 70-85% methane and the balance mostly nitrogen.

58. (Previously presented) The method of claim 50, wherein said establishing comprises establishment of methane fermentation within an open pit that has a top surface area no greater

than approximately 0.09 hectare.

59. (Previously presented) The method of claim 58, wherein said establishing comprises establishment of a fermentation zone having a depth of approximately 6 to 8 meters.

60. (Canceled)

61. (Currently amended) The method of claim 50, further comprising oxidizing gaseous hydrogen sulfide emissions from said methane fermentation zone to form sulfates by means of aerobic wastewater of said ~~outer~~ pond, thereby reducing noxious odors.

62. (Previously presented) The method of claim 50, wherein said methane fermentation zone comprises a bottom that is lower than a bottom of said pond.

63. (Cancelled)

64. (Previously presented) The method of claim 50, wherein said wastewater flows out of said methane fermentation zone in an upward direction at a rate of less than 1.8 meters per day.

65. (Previously presented) A method of treating wastewater, comprising:

forming one or more inner ponds within an outer pond, said outer pond having a surface exposed to sunlight;

establishing a separate methane fermentation zone within each of said one or more inner ponds, wherein said one or more inner ponds are disposed below said surface of said outer pond and have a bottom that is at least 6 meters below said surface of said outer pond; and

feeding wastewater into said one or more methane fermentation zones.

66. (Previously presented) The method of claim 65, wherein said forming comprises forming an outer pond comprising at least partially photosynthetically oxygenated wastewater.

67. (Previously presented) The method of claim 65, further comprising generating free molecular oxygen in said outer pond from growth of microalgae.

68. (Previously presented) The method of claim 65, wherein establishing comprises establishment of said one or more methane fermentation zones comprising semi solid material in a highly reduced state to facilitate conversion to methane.

69. (Previously presented) The method of claim 65, further comprising deflecting oxygen from said one or more methane fermentation zones.

70. (Previously presented) The method of claim 65, further comprising deflecting oxygen to reduce intrusion of dissolved oxygen from said outer pond into said one or more methane

fermentation zones.

71. (Previously presented) The method of claim 65, wherein said establishing comprises establishment of said one or more methane fermentation zones comprising facultative heterotrophic bacteria and methane bacteria.

72. (Previously presented) The method of claim 71, wherein said establishing comprises causing said facultative heterotrophic bacteria and methane bacteria to produce a gaseous emission.

73. (Previously presented) The method of claim 71, wherein said establishing comprises causing said facultative heterotrophic bacteria and methane bacteria to produce a gaseous emission comprising about 70-85% methane and the balance mostly nitrogen.

74. (Canceled)

75. (Previously presented) The method of claim 65, wherein said forming comprises forming an inner pond that is about 6 to 8 meters deep.

76. (Previously presented) The method of claim 75, wherein said forming comprises forming an inner pond that has a top surface area no greater than approximately 0.09 hectare.

77. (Previously presented) A method of treating wastewater, comprising:
establishing methane fermentation within a fermentation pit that is within an outer pond, wherein said fermentation pit has a bottom that is at least 6 meters from a top surface of said outer pond;

deflecting dissolved oxygen in said outer pond from said fermentation pit with a wall vertically surrounding said fermentation pit, wherein a top of said wall is at least 1.5-2.5 meters below said top surface of said outer pond; and

feeding wastewater into said fermentation pit.

78. (Currently amended) ~~A The method of treating wastewater claim 77, comprising:~~
~~establishing methane fermentation within a fermentation pit that is within an outer pond;~~
~~deflecting dissolved oxygen in said outer pond from said fermentation pit with a wall vertically~~
~~surrounding said fermentation pit, wherein said wall has a height of approximately 2.5 meters~~
~~from the bottom surface of said outer pond adjacent to said fermentation pit; and~~
~~feeding wastewater into said fermentation pit.~~